



# The prevalence of gastrointestinal parasites in *Panthera pardus* of Katepurna wildlife sanctuary, Akola India

Shirbhate Milind<sup>1</sup>✉ and Shirbhate Amrita<sup>2</sup>

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## Abstract

To study the prevalence of gastrointestinal parasites of *Panthera pardus*, 26 scat samples were collected from Katepurna Sanctuary during the census period conducted by forest department during January 2018. Out of these 21 samples had the highest overall infection rate of *Paragonimus* sp. Echinostomatidae, Dicrocoeliidae, Pseudophyllidae, Taeniidae, *Mesocostoides* sp. Hymenolepididae Acanthocephala, Spiruroidea, *Gnathostoma* sp. *Molineus* sp. *Ancylostomoidea*, *Mammomonogamus* sp. *Toxocara*-like, *Toxascaris* sp., *Aelurostrongylus* sp., *Capillaria* sp. and Mixed type of infections of *Ascaris* sp. was found faecal samples. This study provided a first overview on parasites in *Panthera pardus* in the Katepurna Sanctuary.

**Key Words:** *Panthera pardus*, Leopard, Faecal sample, Parasite, Scat analysis.

## Introduction

The leopard (*Panthera pardus*) is one of the five species in the genus *Panthera*, a member of the Felidae. The leopard occurs in a wide range in sub-Saharan Africa and parts of Asia. Leopards are listed as Vulnerable on the IUCN Red List because leopard populations are threatened by habitat loss and fragmentation, and are declining in large parts of the global range. The available information on parasitic infection among wildlife species, particularly in Katepurna Sanctuary Akola is scanty. Hence the present work is the preliminary findings about parasites of *Panthera pardus* in this area. However some of the findings about fecal analysis and parasitic infections from some protected area & Zoo is as follows- Shirbhate (2007) worked on Quantification of predation and incidence of parasitic infestation in Melghat Tiger reserve with special reference to Leopards (*Panthera pardus*). Javaregowda (2015) collected a total of fifty four faecal samples from wild carnivores at Tyavarekoppa Tiger and Lion Safari, Shimoga. Out of fifteen Tiger samples, twelve samples were positive for mixed infection of *Toxocara* sp, *Strongyle* sp, coccidian oocysts and

*Spirometra* sp. Among twenty one leopards, only eleven samples were positive for *Toxocara* sp, and two samples showed mixed infection of *Strongyle* sp., *Toxocara* sp. and oocysts of coccidian. Among six Jackals, three samples were found positive for *Strongyle* sp. and *Toxocara* sp. Thawait and Maiti (2016) examined a total of thirty one faecal samples of different captive wild carnivores. Out of thirty one samples, fourteen samples were found positive for different helminth parasites, with 45.2% prevalence of gastrointestinal parasites. The prevalence of nematodes was found higher than cestodes infection. The prevalence was highest recorded in Jackal and Ratel (100%) followed by Bear and Hyaena (66.67%), Lion (37.5%) and Leopard (25%). They were also found mixed infection of *Toxocara* sp. and *Diphyllobothrium* sp. Treatment of these captive wild carnivores were also done with combinations of Fenbendazole, Pyrantel Pamoate and Praziquantel and found highly effective as 100% reduction in EPG on 7<sup>th</sup> and 14<sup>th</sup> day post treatment.

## Materials and Methods

**Study Area:** The Katepurna Sanctuary in Akola, Maharashtra is an exotic sanctuary dotted with an abundance of flora and fauna. Positioned in Akola district in Vidarbha region of the state of Maharashtra, the sanctuary lies in close proximity

## Author's Address

<sup>1</sup>Department of Zoology, Shankarlal Khandelwal Arts, Science and Commerce College, Akola, Maharashtra, India.

<sup>2</sup>Department of Zoology, Mahatma Phule Arts and Science College, Patur Dist, Akola, Maharashtra, India

**E-mail:** [milindshirbhate2912@gmail.com](mailto:milindshirbhate2912@gmail.com)



to the catchments area of Katepurna reservoir (Mahan Dam). Its area is geographically located at -20°25'0.54"N 77°10'50.14"E. The land vegetation at Katepurna Sanctuary is southern tropical dry deciduous forest. There are over 115 species of plants at this sanctuary such as Bihada, Dhawada, Moha, Tendu, Khair, Salai, Aola, Tendu, etc. Katepurna Wildlife Sanctuary is renowned for the Nilgai, Four-horned antelope and barking deer. Other animals that can see at the sanctuary include Leopard, Sambar, Black buck, Nilgai, Wolf, Wild boar, Hyaena, Hare, Jungle cat and Monkeys. The Katepurna water reservoir attracts many water birds. The leopards are the big predator species found in the Katepurna.

#### Collection and examination of faecal samples:

The material for this study comprises the faecal samples of *Panthera pardus* in and around Katepurna Sanctuary. A total 26 faecal samples were collected from different locations during the census period. Faecal samples were collected in (Zip-log) polythene bags in the census organized by forest department and Nisargakatta Akola. Identification of the samples was carried out by direct sighting of the animals or on the basis of the pugmarks. Fresh samples were preferred for analysis. The polythene bags containing the faecal samples were labeled with date, time, locality (GPS provided by forest department). The bags were properly sealed and were brought to the laboratory. The size and shape of faecal pellets were also noted.

**Methodology-** Faeces mixed with an equal volume of 10% formalin were examined for parasite eggs, larvae, cysts, and oocysts by sugar flotation (specific gravity 1.275) (Georgi and Georgi, 1990) and sedimentation with formalin-ethyl acetate (Young *et al.*, 1979). Parasite products were measured with a microscope equipped with a calibrated eyepiece micrometer with the help of software and identified based on size and morphology. References used for identification were Agrawal *et al.*, 1981; Soulsby, 1982; Beaver *et al.*, 1984; Patton *et al.*, 1986; Dubey *et al.*, 1989; and Georgi and Georgi, 1990.

#### Results and Discussions

After analysis of all 26 faecal samples, 21 samples had the highest overall infection rate of

*Paragonimus* sp. Echinostomatidae, Dicrocoeliidae, Pseudophyllidea, Taeniidae, *Mesocostoides* sp. Hymenolepididae, Acanthocephala, Spiruroidea, *Gnathostoma* sp. *Molineus* sp. *Ancylostomoidea*, *Mammomonogamus* sp. *Toxocara*-like, *Toxascaris* sp., *Aelurostrongylus* sp., *Capillaria* sp. and Mixed type of infections of *Ascaris* sp.

**Evaluation of incidence:** During screening the different samples were examined as per their habitat and incidence of parasitic infections and their percentage were noted. Total percent of parasitic forms found in *Panthera pardus* were evaluated, overall percentage of parasitic infections of zoonotic importance.

TABLE 1. Showing details of Parasites found in Leopard (*Panthera pardus*) and their incidence in %

Sr. No	Name of Parasite	No	% occurrence
1	<i>Paragonimus</i> sp	21	80.7
2	Dicrocoeliidae	20	76.92
3	Echinostomatida	20	76.92
4	<i>Toxocara</i>	16	61.53
5	<i>Toxascaris</i> sp	14	53.84
6	<i>Aelurostrongylus</i> sp	11	42.30
7	<i>Capillaria</i> sp	6	23.07
8	Taeniidae	6	23.07
9	<i>Ancylostomoidea</i>	5	19.23
10	Acanthocephala	4	15.38
11	<i>Molineus</i> sp	3	11.23
12	Pseudophyllidea	3	11.23
13	<i>Mammomonogamus</i> sp	2	7.69
14	<i>Gnathostoma</i> sp	2	7.69
15	Spiruroidea	2	7.69
16	Hymenolepididae	2	7.69
17	<i>Mesocostoides</i> sp	2	7.69

From the above observations it is concluded out of the 26 faecal samples 17 samples were found to be infected with gastrointestinal parasites and overall prevalence rate was 65.38%. (Table1, Fig- 1) As these animals are the part of food chain in the ecosystem, further necessary treatments should be opted for the healthy survival of the species in the protected area. Our study provides a first overview on parasites of *Panthera pardus* in the Katepurna Sanctuary but to evaluate parasite transmission dynamics, much more studies are required on livestock in the protected area. So, further study may also be conducted to keep restores the

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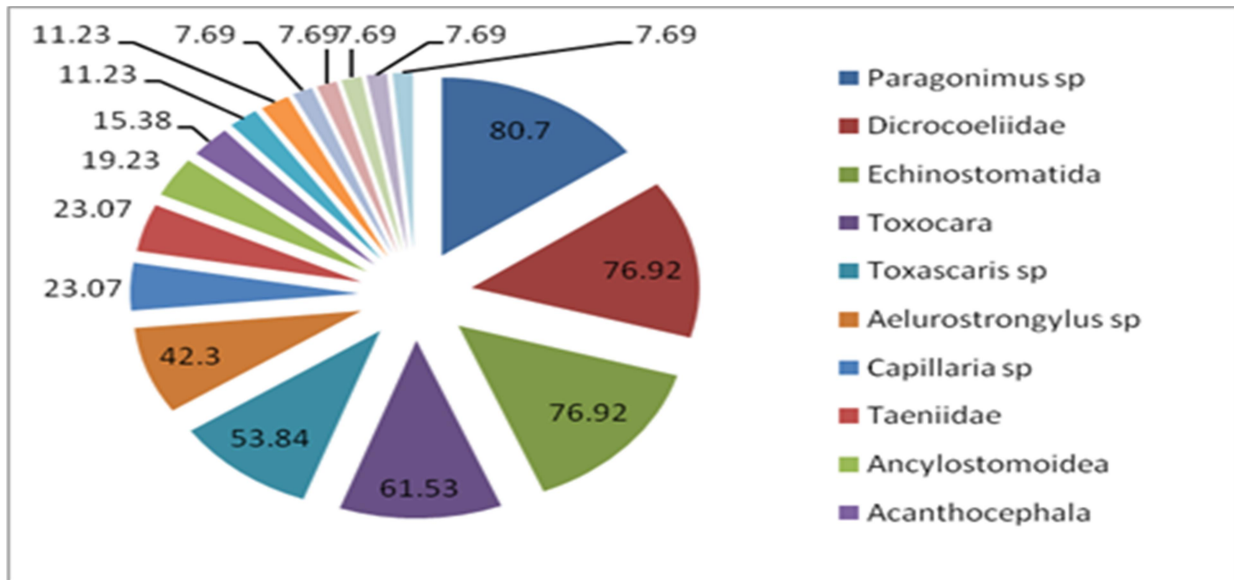


Fig 1: Showing incidence of parasites in percentage (%)

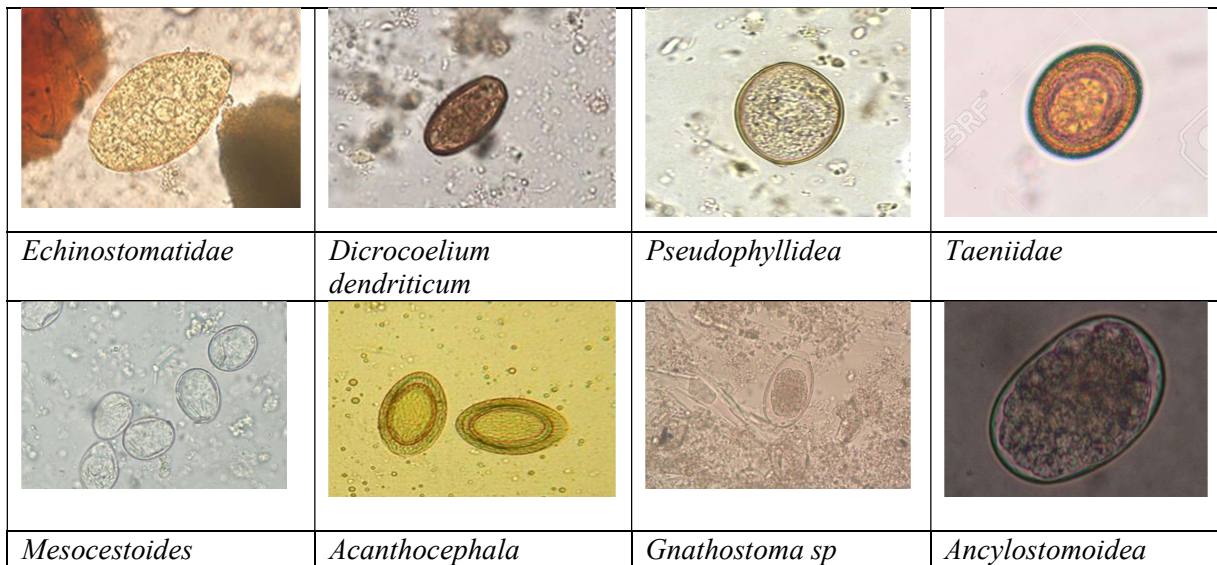


Fig 2: Showing eggs and cysts of parasites in *Panthera pardus*

ecological balance as well as to assess the losses on economic point of view, due to parasitic diseases of Leopard.

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